

(12)

- (54) Box pallets**

secured by connectors (20) to the pallet and extend from the pallet over two outer flaps (15) which, with two inner flaps, form the bottom of the box, the straps lying between the outer flaps and the inner flaps.



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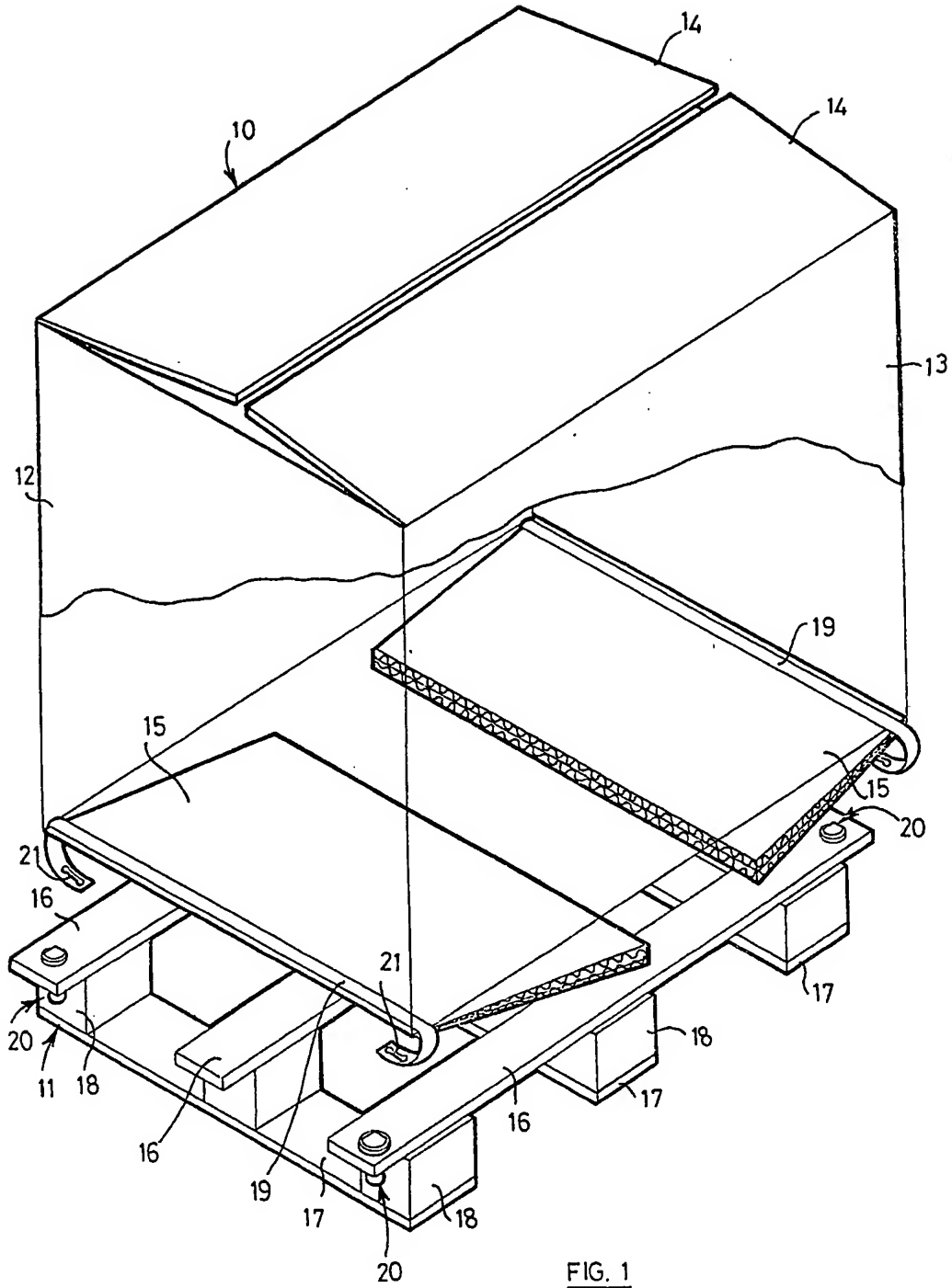


FIG. 1

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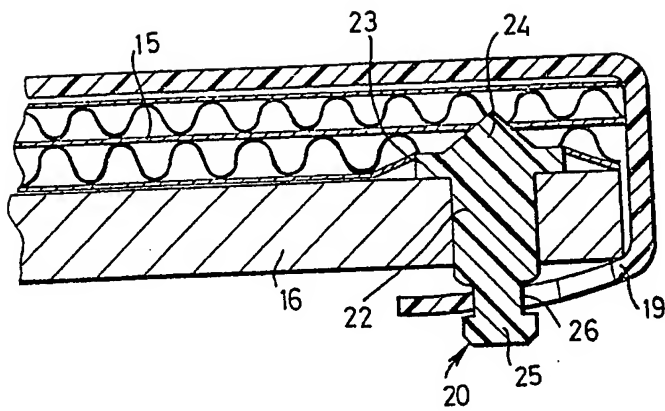


FIG 2

## SPECIFICATION

## Improvements relating to containers

This invention relates to an assembly of the kind, hereinafter referred to as the kind specified, comprising a collapsible or semi-rigid container and a rigid support which is attached to the bottom of the container to protect the container and its contents and to facilitate handling of the container.

The invention has been devised primarily in connection with an assembly of the kind specified in which the container is a box of cardboard, corrugated board or similar material and the support is a pallet of, for example, wood or plastics designed for handling by a forklift truck. The following description will be confined to this application of the invention but it is to be understood that there is no limitation in this regard.

The present invention has for its object to provide an improved method and means for attaching the support to the container in an assembly of the kind specified.

According to a first aspect of the invention there is provided an assembly of the kind specified wherein the support is attached to the container by at least one flexible elongate element which is engaged with the support and extends from the latter over the upper face of a portion of the bottom of the container.

The or each element may extend through openings formed in opposed parts of the side wall of the container above and close to the upper face of the bottom of the container so that the element extends across the bottom inside the container. This arrangement would be used primarily when the bottom of the container is permanently formed, for example it comprises either an end cap having a bottom wall and an upstanding side wall which is permanently secured to the lower margin of the side wall of the container, or flaps which are formed integrally with the side wall, extend inwardly from the latter in overlapping relationship and are permanently secured together.

However, when the container has a bottom formed by flaps of this form which are not permanently secured together, which is usually the case when the container is a collapsible cardboard box, it is preferred that the or each element extends over the upper face of one of the flaps so that it lies between said flap and the flap or one of the flaps which it overlaps.

The or each element may be an endless element which is resiliently extensible and extends in a loop around a portion of the bottom of the container and a portion of the support, or an ended element having its ends secured together so that it forms a loop in the same way. In both cases the or each element may be secured to the support. In another arrangement, the or each element may be an ended element having its ends secured to the support in spaced apart relationship.

The assembly may be provided, for the or each

element, with one or more connectors adapted in the case of an endless element for securing the element to the support or, in the case of an ended element, for securing the ends of the element to one another and/or to the support. The or each element is preferably removably attached to its connector or connectors so that the element or elements can be released to enable the support to be detached from the container.

Preferably the support is attached to the container by two parallel elements disposed adjacent opposite sides of the assembly. In addition there may be one or more further elements between these two elements.

The invention also provides a method of attaching the support to the container of an assembly of the kind specified, which comprises positioning at least one flexible elongate element over the upper face of a portion of the bottom of the container and engaging the element with the support.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:—

FIGURE 1 is a perspective view, partly cut away, of one form of box and pallet assembly embodying the invention, the assembly being shown in a position immediately prior to attachment of the pallet to the box; and

FIGURE 2 is a cross-section through part of the assembly.

The assembly illustrated in the drawings comprises a container in the form of a rectangular cardboard box 10 and a support in the form of a pallet 11, for example of wood or plastics, which is designed for handling by a forklift truck.

The box 10 is formed from a one-piece blank cut from a sheet of single, double or triple corrugated board. The box has a side wall comprising two opposed rectangular portions 12 providing its short sides, and two opposed rectangular portions 13 providing its long sides, a top comprising two flaps 14 extending from the long sides and two flaps (not shown) extending from the short sides of the box, and a bottom comprising two flaps 15 extending from the short sides and two flaps (not shown) extending from the long sides.

The box is usually supplied in a collapsed condition for erection by the user. When the box is erected, the short flaps of its top are folded inwardly beneath the long flaps 14 which therefore lie outside the box. The short flaps 15 of the bottom are normally also folded inwardly before the long flaps so that they lie on top of the latter, but in this case, the long flaps are folded inwardly first so that the short flaps lie outside the box.

The pallet 11 comprises three spaced longitudinal members 16 and three spaced cross members 17 secured to blocks 18 disposed between the members so that the upper members 16 provide a rigid platform or base to support the bottom of the box and the lower members 17 can rest on the ground or other supporting surface.

The cross members 17 and the blocks 18 are spaced apart to provide two gaps into which can be inserted the forks of a forklift truck for handling of the assembly.

- 5 The pallet 11 is attached to the box 10 by attachment means comprising two ended, flexible elongate elements in the form of straps 19 of a plastics material or rubber, and four connectors 20.

- 10 Each strap 19 is formed adjacent each end thereof with a slit 21.

- The connectors 20 are mounted at the respective ends of the two outer longitudinal members 16 of the pallet. Each connector 15 comprises an element, for example of plastics such as Nylon, or metal, having a portion 22 of circular cross-section which is received with a friction fit in a complementary aperture formed in the member 16 concerned, a circular flange 23 at its upper end which bears against the upper face of the member 16 and has an upstanding conical portion 24, and a circular head 25 at its lower end with a circumferential groove 26 formed between the head and the portion 22. The portion 22 may 25 be knurled or similarly formed to enhance its friction fit in the aperture in the member 16.

- To attach the pallet to the box, the connectors 20 are fitted to the pallet and the straps 19 are passed across the short flaps 15 of the bottom of the box so that they extend over the upper faces of 30 these flaps and lie between the flaps and the long flaps of the bottom.

- The box is then placed on the pallet. The conical portions 24 of the connectors 20 dig into the flaps 35 15, as shown in Figure 2, without completely penetrating the flaps, to locate the box against sideways movement on the pallet. The ends of the straps 19 which project from the box, as shown in Figure 1, are then secured to the connectors 20, 40 each end being pressed onto the associated connector so that the head 25 of the connector passes through the slit 21 in the strap and anchors the strap in the circumferential groove 26, as shown in Figure 2.

- 45 The straps are of a length such that they are tight and therefore hold the box firmly on the pallet, in particular so that the lowermost flaps 15 are pressed against the pallet and cannot move.

- The pallet is constructed so that the blocks 18 50 adjacent to the connectors project beyond the outer longitudinal edges of the outer members 16 by a distance such that the portions of the straps 19 extending around these outer longitudinal edges do not project beyond the blocks. In this 55 way the straps are protected against knocks.

- The attachment means provided by the invention are simpler and less expensive than those forms of attachment means which are currently used in box and pallet assemblies. The 60 attachment means can be easily fitted by the user. The pallet can be easily detached from the box simply by disconnecting the straps 19 from the connectors 20 and withdrawing them from the bottom of the box, whereupon the box may be 65 collapsed for transport and storage.

The attachment means may be used with box s and pallets of other forms. For example, the box may have a separate lid in the form of an end cap instead of flaps providing its top.

- 70 In another example, the box may be of the sleeve and end cap type comprising an initially separate side wall fitted with a top end cap providing a lid and a bottom end cap, the straps 19 in this case passing through holes formed in 75 the side wall adjacent the upper face of the bottom end cap.

- Although in the example illustrated the straps extend over the short flaps 15 of the bottom of the box, they could extend over the long flaps, in 80 which event the box is erected in the normal way with the short flaps inside the long flaps.

- In a modification, the assembly may have only two connectors 20 which are mounted at the respective ends of the central longitudinal 85 member 16, instead of four connectors fitted to the outer longitudinal members as shown. In this case, the straps 19 are longer so that both ends of each strap can be secured to the one connector at the adjacent end of the pallet. Thus, one end of the 90 strap is first secured to the connector, the strap is pulled tight and then the other end is secured to the connector, both ends being held in the circumferential groove 26 of the connector which if necessary may be made slightly wider in this 95 case.

#### CLAIMS

1. An assembly of the kind specified wherein the support is attached to the container by at least one flexible elongate element which is engaged 100 with the support and extends from the latter over the upper face of a portion of the bottom of the container.
2. An assembly as claimed in Claim 1 wherein the or each element extends through openings formed in opposed parts of the side wall of the 105 container above and close to the upper face of the bottom of the container so that the element extends across the bottom inside the container.
3. An assembly as claimed in Claim 1 wherein 110 the or each element extends over the upper face of a flap forming part of the bottom of the container.
4. An assembly as claimed in Claim 1 wherein the bottom of the container comprises flaps which are formed integrally with the side wall of the 115 container and extend inwardly from the side wall in overlapping relationship, the or each element extending over the upper face of one of the flaps so that it lies between said flap and the flap or one of the flaps which it overlaps.
5. An assembly as claimed in any one of the preceding claims wherein the or each element is an endless element which is resiliently extensible and extends in a loop around a portion of the 120 bottom of the container and a portion of the support.
6. An assembly as claimed in any one of Claims 1 to 4 wherein the or each element is an ended element having its ends secured together so that it forms a loop extending around a portion 125

f the bottom of the container and a portion of the support.

7. An assembly as claimed in Claim 5 or Claim 6 wherein the or each element is secured to the support.

8. An assembly as claimed in any one of Claims 1 to 4 wherein the or each element is an ended element having its ends secured to the support in spaced apart relationship.

9. An assembly as claimed in Claim 6, 7 or 8 which further includes, for the or each element, one or more connectors adapted in the case of an endless element for securing the element to the support, or in the case of an ended element for securing the ends of the element to one another and/or to the support.

10. An assembly as claimed in Claim 9 wherein the or each element is removably attached to its connector or connectors so that the element or elements can be released to enable the support to be detached from the container.

11. An assembly as claimed in Claim 9 or Claim 10 wherein each connector is secured to the support and has a portion arranged to engage the container to locate the latter against sideways

movement relative to the support.

12. An assembly as claimed in Claim 1 wherein the bottom of the container comprises flaps which are formed integrally with the side wall of the container and extend inwardly from the side wall in overlapping relationship and which include two opposed outer flaps, the support being attached to the container by two said elements in the form of ended elements which have their ends secured to the support and extend over the upper faces of the respective outer flaps.

13. A method of attaching the support to the container of an assembly of the kind specified, which comprises positioning at least one flexible elongate element over the upper face of a portion of the bottom of the container and engaging the element with the support.

14. An assembly comprising a container and a support substantially as herein described with reference to the accompanying drawings.

15. A method of attaching a support to a container substantially as herein described.

16. Any novel feature or novel combination of features disclosed herein and/or illustrated in the accompanying drawings.